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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,381	07/06/2004	Vadiraja Bhatt	SYB/0102.01	4380
31779	7590	11/09/2006	EXAMINER	
JOHN A. SMART 708 BLOSSOM HILL RD., #201 LOS GATOS, CA 95032-3503			AHMED, HAMDY S	
			ART UNIT	PAPER NUMBER
			2181	

DATE MAILED: 11/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/710,381	BHATT ET AL.	
	Examiner	Art Unit	
	Hamdy S. Ahmed	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07/06/2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/20/2005</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim objections***

Claims 22 and 23 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Dependent claims 22 and 23, are a product claims, while their independent claim 1 is a method claim. Applying the infringement test, one could infringe upon dependent claims 22 and 23, by possessing a CD-ROM having computer executable code or downloadable computer program that, if and when executed by a computer, would carry out the state changing method of claim 1. Merely possessing said CD-ROM, or downloadable computer program however, would not infringe upon claim 1, unless it is used.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

As to claim 23, is rejected under 35 U.S.C. 101, because executable instructions are software programs and software programs are not patentable subject matter.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 – 3, 5 – 26, and 28 - 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Alsup (US No.: 2004/0103251 A1).

As to claim 1, the Alsup reference teaches a method for extended memory (the memory is extended by having two caches, see abstract lines 5 - 7) support in a database system (see figure 3, data B1, data B2, and data B3) having a primary cache (see L1 cache, paragraph 5, line 2), the method comprising: creating a secondary cache (see L2 cache, paragraph 5, line 1) in memory available to the database system (see figure 3, system memory); mapping a virtual address (see figure 3, tag A- tag AM) range to at least a portion (see figure 3, tag portion 330) of the secondary cache (see figure 3, L2 cache memory 130); when the primary cache is full, replacing pages from the primary cache using the secondary cache (see paragraph 6, if a miss occurs in the L1..., lines 5-8, and paragraph 44, lines 2-6); in response to a request for a particular page, searching for the particular page in the secondary cache if the particular page is not found in the primary cache (see paragraph 6, lines 3 - 6) if the particular page is found in the secondary cache (see L2 miss, figure 4), determining a virtual address in the secondary cache where the particular page resides based on the mapping (see figure 2, the mapping between tag portion 230 and data portion 235) ; and swapping the particular page found in the secondary cache with a page in the primary cache (see

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paragraph 6, lines 11 - 15) , so as to replace a page in the primary cache with the particular page from the secondary cache (see paragraph 7, lines 10 - 13).

As to claim 2, the Alsup reference teaches wherein said creating step includes creating the secondary cache using a shared memory file system (see figure 1, L2 cache, which communicates with L1 data cache 101B and another shared subsystem).

As to claim 3, the Alsup reference teaches wherein the shared memory file system is available as part of an operating system on a computer platform on which the database system is running (see figure 2, system memory communicates with the database, as part of one operating system).

As to claim 5, the Alsup reference teaches wherein said mapping step includes using a memory mapped file function (see paragraph 21, line 10).

As to claim 6, the Alsup reference teaches wherein the memory mapped file function is available as part of an operating system on a computer platform on which the database system is running (see figure 2)

As to claim 7, the Alsup reference teaches wherein said creating step includes creating the secondary cache on external memory available to the database system (see figure 2, L2 is available to data B1- data B3).

As to claim 8, the Alsup reference teaches wherein said swapping step includes consulting a least recently used (LRU) list maintained for the primary cache to determine the page to be moved to the secondary cache (see paragraph 6, lines 8 - 15).

As to claim 9, the Alsup reference teaches wherein said swapping step further comprises copying the page to be moved to the secondary cache to a temporary buffer (each cache has a temporary buffer; see paragraph 38, lines 1 - 4).

As to claim 10, the Alsup reference teaches wherein said swapping step further comprises moving the particular page from the secondary cache to the address of the page in the primary cache to be moved to the secondary cache (see paragraph 6, lines 8 - 15).

As to claim 11, the Alsup reference teaches wherein said swapping step further comprises moving the page from the temporary buffer to the secondary cache (each cache has a temporary buffer, see paragraph 38, lines 1 - 4).

As to claim 12, the Alsup reference teaches wherein further comprising: adding the replaced page to a most recently used end of a most recently used/least recently used (MRU/LRU) list maintained for the secondary cache (this is a normal transfer operation of a page between the first cache and the second cache).

As to claim 13, the Alsup reference teaches wherein said replacing step includes maintaining a least recently used (LRU) list for the primary cache and selecting the page to be moved to the secondary cache based on said LRU list (this is normal transfer operation between the first cache and the second cache).

As to claim 14, the Alsup reference teaches providing a washing mechanism in the secondary cache for writing pages in the secondary cache to disk (see paragraph 28, lines 10 - 12).

As to claim 15, the Alsup reference teaches wherein a page is written from the secondary cache to disk in response to copying a page from disk to the primary cache (see paragraph 6, lines 8 – 15).

As to claim 16, the Alsup reference teaches wherein the page written from the secondary cache to disk is selected, based at least in part, on a most recently used/least recently used (MRU/LRU) list maintained for the secondary cache (see paragraph 48, lines 1 – 15).

As to claim 17, the Alsup reference teaches wherein said replacing step includes determining pages to be maintained in the secondary cache (see paragraph 5, lines 12 - 14).

As to claim 18, the Alsup reference teaches wherein said determining step includes determining pages to be maintained in the secondary cache based, at least in part, on the workload of the database system (see figure 2, where the virtual address is maintained between L2 data base).

As to claim 19, the Alsup reference teaches wherein said replacing step includes substeps of: moving a page from the primary cache to the secondary cache; and reading a page into the primary cache from disk (see paragraph.

As to claim 20, the Alsup reference teaches the method wherein said substep of moving a page from the primary cache includes selecting a page from the primary cache based on a least recently used (LRU) list maintained for the primary cache (this is normal operation of transfer of page between first cache and second cache, see paragraph 48, lines 1 - 12).

As to claim 21, the Alsup reference teaches a location for the page in the secondary cache based on a most recently used/least recently used (MRU/LRU) list maintained for the secondary cache (this is normal transfer operation of a page between first cache and second cache, see paragraph 48, lines 1 - 12).

As to claim 24, the Alsup reference teaches a database system providing extended memory support, the system comprising: a primary cache (see L1 cache, paragraph 5, line 2) for maintaining data pages used by the database system in addressable memory available to the database system; a secondary cache (see L2 cache, paragraph 5, line 1) for maintaining data pages replaced from the primary cache in extended memory available to the database system (see figure 2, L2 is available to data B1- data B3); a search module for receiving a request from a user for particular data page and determining whether the particular data page is in secondary cache if the particular data page is not in the primary cache (see paragraph 47, lines 4 - 7); and a module for replacing a data page in the primary cache with the particular data page from the secondary cache if the particular data page is found in the secondary cache (see paragraph 48, lines 6 - 9), wherein said substep of moving a page from the primary cache includes selecting (see paragraph 47, lines 4 - 10).

As to claim 25, the Alsup reference teaches wherein the secondary cache using a shared memory file system (the secondary cache communicates with the primary cache and the memory system, which constitutes a shared memory system; see figure 3).



As to claim 26, the Alsup reference teaches wherein the shared memory file system is available as part of an operating system on a computer platform on which the database system is running (see figure 2, where the shared memory file system communicates with the database system (data B0 – B3) on a common computer platform).

As to claim 28, the Alsup reference teaches a method wherein the secondary cache is mapped to the extended memory using a memory mapped file function (the memory is extended by having two caches; see abstract, lines 5 - 7); the secondary cache using a memory (see figure 2; L2 communicates with system memory).

As to claim 29, the Alsup reference teaches a method wherein the memory mapped file function is available as part of an operating system on a computer platform on which the database system is running (see figure 2; system memory communicates with the database as part of one operating system).

As to claim 30, the Alsup reference teaches a method wherein the secondary cache is created on external memory available to the database system (see figure 2; L2 communicates with system memory).

As to claim 31, the Alsup reference teaches a method wherein the primary cache includes a least recently used (LRU) list for determining data pages to be moved to the secondary cache (this is a normal transfer operation of a page between the first cache and the second cache, see paragraph 48, lines 1 - 12).

As to claim 32, the Alsup reference teaches a method wherein the module for replacing consults the LRU list for selecting the data page to be moved to the secondary

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cache (this is a normal transfer operation of a page between the first cache and the second cache; see paragraph 48, lines 1 - 12).

As to claim 33, the Alsup reference teaches a method wherein the module for replacing copies the data page to be moved to the secondary cache to a temporary buffer.

As to claim 34, the Alsup reference teaches a method wherein the module for replacing moves the particular data page from the secondary cache to address of the data page in the primary cache to be moved to the secondary cache (see paragraph 47, lines 4 - 10).

As to 35, the Alsup reference teaches a method wherein the module for replacing moves the data page from the temporary buffer to the secondary cache buffer (each cache has a temporary buffer; see paragraph 38, lines 1 - 4).

As to claim 36, the Alsup reference teaches a method wherein the secondary cache includes a most recently used/least recently used (MRU/LRU) list and the module for replacing adds the data page moved to the secondary cache to the most recently used end of said MRU/LRU list (see paragraph 47, lines 10 - 12).

As to claim 37, the Alsup reference teaches a washing mechanism in the secondary cache for writing data pages in the secondary cache to disk (see paragraph 28, lines 10 - 12).

As to claim 38, the Alsup reference teaches a method wherein the washing mechanism writes a data page in the secondary cache (see L2 figure 2, to disk in

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response to copying a data page from disk to the primary cache (see figure 2, and paragraph 47, lines 6 - 9).

As to claim 39, the Alsup reference teaches a method wherein the washing mechanism selects the data page from the secondary cache based, at least in part, on a most recently used/least recently used (MRU/LRU) list maintained for the secondary cache (see paragraph 47, lines 10 - 12).

As to claim 40, the Alsup reference teaches a method wherein the module for replacing determines data pages to be maintained in the secondary cache (see paragraph 6, lines 11 - 12).

As to claim 41, the Alsup reference teaches a module for reading a page into the primary cache from disk (see paragraph 25, lines 1 - 3)

As to claim 42, the Alsup reference teaches a method wherein the module for reading selects a data page from the primary cache to be moved to the secondary cache if the primary cache is full (see paragraph 7, lines 10 - 13).

As to claim 43, the Alsup reference teaches a method wherein the module for reading selects the data page based on a least recently used (LRU) list maintained for the primary cache (see paragraph 48, lines 10 - 13).

As to claim 44, the Alsup reference teaches a method wherein the module for reading selects a location in the secondary cache for the data page to be moved from the primary cache (see paragraph 48, lines 10 - 13).

As to claim 45, the Alsup reference teaches a method wherein the module for reading selects the location in the secondary cache based on a most recently used/least

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recently used (MRU/LRU) list maintained for the secondary cache (see paragraph 48, lines 10 - 13).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alsup (US No: 20040103251 A1) in view of Austin et al. (US No: 20030162544 A1).

As to claim 4, Alsup reference teaches all the limitation of claim 1-3 as the above, but Alsup reference does not teach, the use of a Linux operating system. The Austin reference teaches the use of a Linux operating system (see paragraph 58 lines 1-10). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to have modified the Alsup system by using the Austin system reference by using a Linux operating system, because is widely used as the operating system for a number of different applications. Accordingly, the system can implement a wide variety of standard operating software for network servers and the like, as well as allowing third parties the opportunity to modify existing software and develop their own software.

As to claim 27, Alsup reference teaches all the limitation of claim 26, as the above, but Alsup reference does not teach, the use of a Linux operating system. The Austin reference teaches the use of a Linux operating system (see paragraph 58 lines

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1-10). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to have modified the Alsup system by using the Austin system reference by using a Linux operating system, because is widely used as the operating system for a number of different applications. Accordingly, the system can implement a wide variety of standard operating software for network servers and the like, as well as allowing third parties the opportunity to modify existing software and develop their own software.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hamdy S. Ahmed whose telephone number is 571-270-1027. The examiner can normally be reached on M-TR 7:30-5:00pm and Every 2nd Friday 7:30-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hung Sough can be reached on 571-272-4199. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HA

Hamdy Ahmed

11/06/06

  
HYUNG SOUGH  
PATENT EXAMINER  
11-7-06